FORM PTO-1390 (REV. 11-2000)	US DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	ATTORNEY'S DOCKET NUMBER
TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371		3882-0101P
		U.S. APPLICATION NO. (If known, see 37 CFR 1.5) 09/980621

INTERNATIONAL APPLICATION NO.	INTERNATIONAL FILING DATE	PRIORITY DATE CLAIMED
PCT/KR99/00277	June 5, 1999	- - - -

TITLE OF INVENTION

DIGITAL PRODUCT LICENSE CONTROL SYSTEM BASED ON INDEPENDENT DIGITAL PRODUCT REGISTRATION SERVER

APPLICANT(S) FOR DO/EO/US

PARK, Hyo Joon

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.

2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.

3. ☒ This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39 (1).

4. ☒ The US has been elected by the expiration of 19 months from the priority date (Article 31).

5. ☒ A copy of the International Application as filed (35 U.S.C. 371(c)(2))

    a. ☒ is transmitted herewith (required only if not transmitted by the International Bureau). WO 00/75787

    b. ☒ has been transmitted by the International Bureau.

    c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).

6. ☐ An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).

    a. ☐ is transmitted herewith.

    b. ☐ has been previously submitted under 35 U.S.C. 154(d)(4)

7. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3)).

    a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).

    b. ☐ have been transmitted by the International Bureau.

    c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.

    d. ☒ have not been made and will not be made.

8. ☐ An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).

9. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).

10. ☐ An English language translation of the annexes of the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11. to 20. below concern document(s) or information included:

11. ☒ An Information Disclosure Statement under 37 CFR 1.97 and 1.98, Form PTO-1449(s), and International Search Report (PCT/ISA/210) with 5 cited document(s).

12. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.

13. ☒ A FIRST preliminary amendment.

14. ☐ A SECOND or SUBSEQUENT preliminary amendment.

15. ☒ A substitute specification.

16. ☐ A change of power of attorney and/or address letter.

17. ☐ A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821-1.825.

18. ☐ A second copy of the published international application under 35 U.S.C. 154(d)(4).

19. ☐ A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).

20. ☒ Other items or information:

    1.) Zero (0) sheets of Formal Drawings

U.S. APPLICATION NO (if known, see 37 CFR 1 5) **09/ 980621** NEW	INTERNATIONAL APPLICATION NO PCT/KR99/00277	ATTORNEY'S DOCKET NUMBER 3882-0101P

21. ☒ The following fees are submitted:

| | CALCULATIONS | PTO USE ONLY |

BASIC NATIONAL FEE (37 CFR 1.492(a)(1)-(5):

Neither international preliminary examination fee (37 CFR 1.482)
nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO
and International Search Report not prepared by the EPO or JPO. **$1,040.00**

International preliminary examination fee (37 CFR 1.482) not paid to
USPTO but International Search Report prepared by the EPO or JPO **$890.00**

International preliminary examination fee (37 CFR 1.482) not paid to USPTO
but international search fee (37 CFR 1.445(a)(2)) paid to USPTO. **$740.00**

International preliminary examination fee (37 CFR 1.482) paid to USPTO
but all claims did not satisfy provisions of PCT Article 33(1)-(4) **$710.00**

International preliminary examination fee (37 CFR 1.482) paid to USPTO
and all claims satisfied provisions of PCT Article 33(1)-(4). **$100.00**

ENTER APPROPRIATE BASIC FEE AMOUNT = $ 1040.00

Surcharge of **$130.00** for furnishing the oath or declaration later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492(e)). $ 0

CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE		
Total Claims	16 - 20 =	0	X $18.00	$	0
Independent Claims	1 - 3 =	0	X $84.00	$	0
MULTIPLE DEPENDENT CLAIM(S) (if applicable)		None	+ $280.00	$	0

TOTAL OF ABOVE CALCULATIONS = $ 1040.00

☒ Applicant claims small entity status. See 37 CFR 1.27. The fees indicated above are reduced by 1/2. $ 520.00

SUBTOTAL = $ 520.00

Processing fee of **$130.00** for furnishing the English translation later than ☐20 ☐30 months from the earliest claimed priority date (37 CFR 1.492(f)). + $ 0

TOTAL NATIONAL FEE = $ 520.00

Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). **$40.00** per property + $ 0

TOTAL FEES ENCLOSED = $ 520.00

| | Amount to be: refunded | $ |
| | charged | $ |

a. ☒ A check in the amount of $ 520.00 to cover the above fees is enclosed.

b. ☐ Please charge my Deposit Account. No. _____ in the amount of $_____ to cover the above fees. A duplicate copy of this sheet is enclosed.

c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 02-2448.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

Send all correspondence to:
Birch, Stewart, Kolasch & Birch, LLP or Customer No. 2292
P.O. Box 747
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Date: December 5, 2001

By _[signature]_
Joseph A. Kolasch, #22,463

/cqc

PATENT
Atty. Docket No. 3882-0101P

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Hyo Joon PARK	Conf.:	Unassigned
Appl. No.:	NEW	Group:	Unassigned
	(Nat'l Phase of PCT/KR99/00277)		
Filed:	December 5, 2001	Examiner:	Unassigned

For: DIGITAL PRODUCT LICENSE CONTROL SYSTEM BASED ON
         INDEPENDENT DIGITAL PRODUCT REGISTRATION SERVER

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents   **December 5, 2001**
Washington, DC 20231

Sir:

The following preliminary amendments and remarks are respectfully

submitted in connection with the above-identified application.

In the Abstract

Please replace the Abstract of the Disclosure with the rewritten Abstract of the

Disclosure located on a separate sheet below:

In te Specification

Please replace the specification with the substitute specification attached hereto.

In The Claims

Please cancel claims 1-5 without prejudice or disclaimer of the subject matter contained therein.

Please add the following new claims:

--6. (NEW) A method of controlling digital product licensing using product registration servers, comprising the steps of:

creating a secret/public key pair for a digital product manufacturer by using a manufacturer digital product license control program installed on a manufacturer computer;

transmitting the manufacturer's public key to a central digital product registration server and receiving a public key of the central digital product registration server;

registering the manufacturer to the central digital product registration server and receiving a partial user-ID file from the central digital product registration server;

registering a digital product with player information to the central digital product registration server and receiving a product registration file of the product from the central digital product registration server;

distributing product information to all local digital product registration servers by the central digital product registration server; and

merging the product and the product registration file and encrypting them to produce a digital product in a public format.

7. (NEW) The method according to claim 6 wherein the central and local registration servers are integrated into a single server.

8. (NEW) The method according to claim 6, wherein the manufacturer digital product license control program attaches the manufacturer's secret/public key pair and the public key of the central digital product registration server to the partial user-ID file that includes manufacturer information encrypted by the manufacturer's public key and digitally signed by a secret key of the registration server.

9. (NEW) The method according to claim 6, wherein the registered digital product information includes a product ID, price, and player name.

10. (NEW) The method according to claim 6, further comprising:

creating a secret/public key pair for a user by using a user digital product license control program installed on a user computer;

selecting a particular local digital product registration server from a digital product registration server list;

sending the user's public key to the selected local registration server and receiving a public key of the selected local registration server; and

registering the user to the selected local registration server and receiving a partial user-ID file from the selected local registration server.

11. (NEW) The method according to claim 10, wherein the user digital product license control program attaches the user's secret/public key pair and the public key of the user's digital product registration server to the partial user-ID file that includes user information encrypted by the user's public key and digitally signed by a secret key of the selected local digital product registration server.

12. (NEW) The method according to claim 10, further comprising:

registering a CPU associated with the user to the selected local digital product registration server; and

receiving a license file that includes CPU information encrypted by the user's public key and digitally signed by the secret key of the selected local digital product registration server.

13. (NEW) The method according to claim 10, further comprising:

downloading public digital products from the Internet by the user;

selecting a particular public digital product using the user computer;

linking the selected public digital product to a user digital product execution program of the user digital product license control program; and

processing the selected public digital product, decrypting said public digital product and reading a product ID from the product registration file by the linked digital product execution program.

14. (NEW) The method according to claim 13, further comprising:

checking a license file from the selected local registration server to determine whether there is a usage license for the selected public digital product;

purchasing a license for the selected public digital product, if there is no license for the selected public digital product and receiving a new license file including the purchased license;

changing the selected public digital product into a personal digital product if there is a license; and

calling a player to execute the personal digital product.

15. (NEW) The method according to claim 14, wherein the user digital product license control program does not check CPU information if a "user based license" indicator is turned on in the license file.

16. (NEW) The method according to claim 14, wherein the user digital product license control program does not check user information if a "CPU based license" indicator is turned on in the license file.

17. (NEW) The method according to claim 14, further comprising:

transferring the partial user-ID file, the license file and the personal digital product to a specific machine.

18. (NEW) The method according to claim 14, further comprising:

storing user information, CPU information and digital product usage license information in a datable of the selected local digital product registration; and

replicating the local digital product registration server database to a central database of the central product registration server.

19. (NEW) The method according to claim 14, wherein the user-ID file and the license file are updated based on an expiration date or refresh period selected by the user.

20. (NEW) The method according to claim 10, further comprising:

registering CPU associated with the user to the particular local digital product registration server.

21. (NEW) The method according to claim 20, wherein in the step of registering the CPU, the user digital product license control program creates a secret/public key pair for the CPU and sends the CPU public key to the particular

local digital product registration server which encrypts and digitally signs a license

file by using the CPU public key.--

REMARKS

Claims 6-21 are pending in the present application. By this Preliminary Amendment, claims 1-5 have been cancelled and new claim 6-21 have been added.

The present Preliminary Amendment provides the Substitute Specification which does not contain new matter. The Substitute Specification corrects numerous grammatical and idiomatic errors and improves readability according to U.S. practice.

Entry of the above amendments is earnestly solicited. An early and favorable first action on the merits is earnestly solicited.

Should there be any outstanding matters which need to be resolved in the present application, the Examiner is respectfully requested to contact Esther H. Chong (Registration No. 40,953) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

Attached hereto is a marked-up version of the changes made to the application by this Amendment.

If necessary, the Commissioner is hereby authorized in this, concurrent, and

further replies, to charge payment or credit any overpayment to Deposit Account No.

02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R.

§ 1.17; particularly, extension of time fees.

Respectfully submitted,

BIRCH, STEWART, KOLASH & BIRCH, LLP

By _____
　　　　Joseph A. Kolasch
　　　　Registration No. 22,463

P.O. Box 747
Falls Church, VA 22032-0747
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JAK/EHC:lmh

Enclosures:　Substitute Specification
　　　　　　　Marked-Up Copy of Specification
　　　　　　　Version with Markings to Show Changes Made

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Abstract

The Abstract has been rewritten as follows:

--ABSTRACT OF THE DISCLOSURE

The registration server is independent of digital product manufacturers and open to all digital product manufacturers. The manufacturer registers his digital product to the server and obtains a [gets] product registration file of the product from the server. The product manufacturer merges the product and the product registration file and encrypts them using a manufacturer digital product license control program. If a public digital product is executed on a user computer, the [said] digital product is linked to a user digital product execution program which is a subsystem of a user digital product license control program. The program decrypts the [said] digital product and reads the product ID from the product registration file. The [And said] program also checks the license file received from a digital product registration server. If there is no license for the digital product, the [said] program asks the user to purchase [buy] a license of the product.--

In the Specification

The specification has been replaced with the substitute specification attached hereto. A marked-up copy of the specification is also attached hereto.

In the Claims

Claims 1-5 have been cancelled.

New claims 6-21 have been added.

DIGITAL PRODUCT LICENSE CONTROL SYSTEM BASED ON INDEPENDENT DIGITAL PRODUCT REGISTRATION SERVER

RELATED APPLICATION

This is the national phase under 35 U.S.C. § 371 of PCT International Application No. PCT/KR99/00277 which has an International filing date of June 5, 1999, which designated the United States of America.

BACKGROUND OF THE INVENTION

Field of the Invention

This invention related to a digital product license control method and system for controlling licensing of digital products using digital product registration servers.

Discussion of Related Art

There are limited software license control systems and digital product license control systems for controlling licensing of certain products. But the present invention provides a digital product license control method and system which is superior and advantages over the existing product license control systems.

SUMMARY OF THE INVENTION

The present invention is directed to a digital product license control method and system based on digital product registration servers, which overcomes problems associated with related digital product license control methods and systems.

In accordance with an embodiment of the present invention, a method of controlling digital product licensing using product registration servers, comprises the steps of: creating a secret/public key pair for a digital product manufacturer by using a manufacturer digital product license control program installed on a manufacturer computer, transmitting the manufacturer's public key to a central digital product registration server and receiving a public key of the central digital product registration server, registering the manufacturer to the central digital product registration server and receiving a partial user-ID file from a local digital product registration server, registering a digital product with player information to the central digital product registration server and receiving a product registration file of the product from the central digital product registration server, distributing product information to all local digital product registration servers by the central digital product registration server, and merging the product and the product registration file and encrypting them to produce a digital product in a public format.

These and other objects of the present application will become more readily apparent from the detailed description given hereinafter. However, it should be understood that the detailed description and specific examples, while indicating preferred embodiments of the invention, are given by way of illustration only, since various changes and modifications within the spirit and scope of the invention will become apparent to those skilled in the art from this detailed description.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

According to the present invention, a registration server is independent of digital product manufacturers and open to all digital product manufacturers. Every digital product would need to be modified to participate in this new

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digital product license control system and method of the present invention.

In the present invention, a digital product manufacturer is registered to a registration server. Generally, digital products such as MP3 or VOD files, which cannot be executed alone, are processed by specific programs (players). The product manufacturer registers his digital product, with the player information, to the registration server and obtains a product registration file of the product from the registration server. The product manufacturer merges the product and the product registration file and encrypts them using the manufacturer's digital product license control program. The output is a public digital product.

A public digital product has a specific file type such as "sampleMP3.ds1". If a public digital product is executed on a user computer, then that digital product is linked to a digital product execution program which is the subsystem of the user's digital product license control program installed on the user computer. Digital products (public digital products) are then downloaded from the Internet or other networks and are executed by double clicking an icon on the user's computer screen.

Upon double clicking on the digital product displayed on the user's computer screen, the user's license control program processes the digital product. Particularly, the user's license control program decrypts the digital product and reads a product ID from the product registration file downloaded with the digital product. The user's license control program also checks a license file to determine whether there is a usage license for the digital product. The license file is provided from a digital product registration server. If there is no license for the digital product, then the user's program asks the user to buy a license for the digital product. If the user does not agree to buy the license,

then the user's program stops execution of the digital product. However, if the user agrees to buy the license, then the user's license control program receives a new license file, which includes the purchased license, from the registration server and converts the public digital product into a personal digital product. A

5   personal digital product has a specific file type such as "sampleMP3.ds2".

If there already exists a license by the user for the digital product, then the user's license control program can convert the (public) digital product to a personal digital product at any time. A personal digital product cannot be interpreted without the user-ID file which was used in creating the personal

10   digital product. Then the user's license control program calls a player or other suitable means to execute the personal digital product.

In the present invention, unauthorized users cannot access or use the personal digital product. Also the license file cannot be used or accessed by unauthorized users because the license file is encrypted by using the user's

15   public key and digitally signed by using a secret key of the digital product registration server. To use a license file, the user needs the secret key of the user and a passphrase or the like to activate the secret key. The license file is digitally signed by the digital product registration server and cannot be modified by the user to add any unauthorized license.

20   The license file includes 3 pieces of information in addition to license information. They are: user ID, CPU (computer device) ID and owner ID. If the user ID in the license file is different from the user ID of the user-ID file, then the license file is ignored by the user's digital product license control program. If the CPU ID in the license file is different from the CPU ID of processor such

25   as PSN of Intel processor Pentium III or computer, then the license file is ignored by the user's digital product license control program. In this manner,

even authorized users cannot execute their personal digital product on unauthorized computers.

A digital product license control system according to an embodiment of the present invention includes one or more manufacturer computer devices or systems used and controlled by digital product manufactures, a central digital product registration server communicating with the manufacturer computer devices, a plurality of local registration servers communicating with the central registration server and the manufacturer computer devices through the central registration server, and a plurality of user communication devices such as a user computer operating on a user side, for example by an individual end user, and communicating with the local registration servers via communication networks such as the Internet or via some other means. The term "local" does not necessarily mean that the local registration server is located close to or locally of the user computer devices, but is used to merely distinguish the local registration server from the central registration server.

In accordance with the present invention, digital product manufacturers register their digital products to the central digital product registration server using their manufacturer computer devices. The central registration server then distributes the registered product information to local digital product registration servers all over the world.

Three types of registration are needed by the user in the present invention and they are: user registration, CPU (user's computer device) registration and digital product usage license registration. Each user registrates himself or herself once per person using the user computer to the registration servers. After that, the user registers his or her CPU once per CPU. Then the user registers a digital product usage license once per every product

of specific CPU. All the registrations are performed after the user's CPU or computer is connected to an appropriate local digital product registration server, e.g., via the Internet.

During the user registration, the user obtains a partial user-ID file from the local digital product registration server which communicates with the central registration server. After receiving the partial user-ID file, the user's digital product license control program attaches a public/secret key pair assigned to the user and a public key of the registration server of the user to the partial user-ID file. This user-ID file is essential in registering the user's CPU and purchasing the digital product. The user-ID file is independent of any CPU and needs to be copied to all of the user's other CPUs.

During the CPU registration, the user obtains the license file from the local digital product registration server. And this license file is updated every time the user purchases a new digital product or upgrades the existing digital product. The digital product information is also added to the license file every time a new product is purchased or the existing product is upgraded. Also, because of expiration dates, the license file is refreshed periodically. The expiration date or refresh period prevents an unauthorized long-term use of the user-ID file or license file. A digital product usage license is given to a specific CPU of a specific user.

In addition to a direct purchase through public digital product execution, there is an indirect purchase. To purchase a digital product without executing the public digital product, the user selects a product category on a license control program screen of the user's computer, and then selects the digital product from the displayed relevant digital products in that product category. Then, the user's license control program sends a digital product

purchase request to the appropriate digital product registration server which in turn transmits a license file to the user's computer. This license file is dependent on a specific CPU and given to a specific CPU of a specific user. Both the user-ID file and license file are encrypted by the user public key and digitally signed by using the digital product registration server secret key. So, only the registration server can modify the user-ID and license files.

In addition to the above "user/CPU based license" method, there are two additional methods according to the present invention: "user-based license" and "CPU-based license" methods. In the user-based license method, a license is given to a specific user without having any CPU restriction on its license file. This license can be used on any CPU and strongly controlled by the user. In the CPU-based license method, a license is given to a specific CPU without having any user restriction on its license file.

In one embodiment, the license file is encrypted by using a user public key, but the CPU based license file is encrypted by using the CPU public key. For the CPU based license, one pair of secret/public key is created just for the CPU. In case of the User/CPU based license and the user based license, the pair of secret/public key of the user is used without creating a new key pair for the CPU. In case the present invention is used in a company setting, a company owner may want to change user information of a PC/workstation depending on which person is using that PC/workstation. For example, if an employee leaves the company, the company owner can assign a different user/employee to the PC/workstation. In this application, then both the company owner information and the user information are stored in the license file and used.

If the digital product is executed on a specific machine such as a MP3

player, which may not necessarily have a full configuration as a personal computer, then the user will need to purchase a digital product through a computer and transfer it to that machine (MP3 player). The user also needs to move his user-ID file, license file and personal digital products to the machine.

5 The user-ID file and license file are simplified files and created by the user's digital license control program. Basically the machine is treated as part of the computer which has the license file. The machine has no CPU ID and is treated as if the machine has the same CPU ID as the computer. If the user of the machine does not have access to a computer, it can be done on any computer.

10 The user's digital license control program of the present invention provides a way to create the user-ID file and license file for the machine.

A method of controlling a digital product license based on a digital product registration server according to an embodiment of the present invention is as follows.

15 A secret/public key pair for a digital product manufacturer is created by a manufacturer digital product license control program installed on a manufacturer computer. After being connected to a central digital product registration server, the manufacturer digital product license control program sends the manufacturer's public key to the central digital product registration

20 server and receives the public key of the central digital product registration server.

The manufacturer (once per manufacture) is registered to the central digital product registration server. Once a user registers, the manufacturer receives a partial user-ID file from the central digital product registration

25 server. The manufacturer digital product license control program attaches the manufacturer's secret/public key pair and the public key of the central digital

product registration server to the partial user-ID file that includes manufacturer information encrypted by the manufacturer's public key and digitally signed by the sever secret key.

Each digital product, preferably with player information, is registered to the central digital product registration server and the manufacturer computer receives a product registration file of the digital product from the central digital product registration server.

The product information is distributed to all local digital product registration servers by the central digital product registration server. Registered digital product information includes a product ID, price, player name, etc. A user can select one or more digital products from the registered digital product list. That is, the user can purchase a digital product by using the digital product list or by executing the product itself. The product list file includes the product information such as product ID, price, etc. Also, the product itself includes the product information. It is easier for the user to buy a particular public digital product by double clicking the public digital product and following the instructions given by the user digital product execution program.

The digital product and the product registration file are merged and encrypted by the manufacturer digital product license control program installed on the manufacturer computer. The output is the format of public digital product.

A secret/public key pair for the user is created by the user digital product license control program on the user computer.

The user connects to a particular local digital product registration server by selecting one from the digital product registration server list displayed on the user computer. The user's public key is then sent to the selected local

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digital product registration server and the public key of the selected local registration server is received by the user computer.

The user (once per person) is registered to the local digital product registration server and the user computer receives a partial user-ID file created based on the registered user information from the local digital product registration server. The user digital product license control program attaches the user's secret/public key pair and the public key of the user's local digital product registration server to the partial user-ID file that includes user information encrypted by the user's public key and digitally signed by the local sever secret key. This user-ID file is essential in registering the user's CPU and in registering a digital product usage license.

The user can register his or her CPU for his computer hardware (once per CPU) to the local digital product registration server. In return, the user computer receives a license file that includes CPU information encrypted by the user's public key and digitally signed by the local digital product registration server secret key from the local digital product registration server.

Public digital products are downloaded from the Internet by the user. The user can double click on a desired public digital product displayed on the user computer. The selected digital product is linked to the digital product execution program of the user digital product license control program installed on the user computer.

The selected public digital product is processed and decrypted and the product ID is read from the product registration file by the linked digital product execution program of the user. The user license control program checks the license file to determine whether there is a usage license for the selected digital product. If there is no license obtained by the user for the

selected digital product, the user can purchase a license for the product; otherwise, the process stops. The newly purchased license file will include the purchased license. However, if there already is a license obtained by the user, the selected digital product is converted into a personal digital product (i.e., format is converted) by the user license control program. Then the personal digital product is executed by a player or the like. User information, CPU information and the digital product usage license information are stored in the local digital product registration server database by the local digital product registration server. The local digital product registration server database is replicated in the central digital product registration server database for backup purposes and for cross digital product registration server function such as changing the digital product registration server and changing the user who was registered to a different digital product registration server from the former user.

In one embodiment, the user-ID file and the license file are updated based on their expiration dates or refresh period. Expiration date or refresh period prevents unauthorized long-term use of the user-ID file and/or license file. The user of a CPU may be changed by the owner of the CPU in case of a user change. The license file can include the owner information.

In another embodiment, only one registration server exists in the world and does all registration services. In such case, the digital product registration server is connected automatically. Consequently, replication from local registration servers to a central registration server is not needed and distribution of registered product information from the central registration server to local registration servers is not needed, since there is only one registration server.

In one embodiment, a digital product usage license is validated without

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giving limitation to a specific CPU. User digital product license control program on a user computer does not check CPU information if a "user based license" indicator or similar information is on or stored in the license file.

In another embodiment, a digital product usage license is validated without giving limitation to the specific user described in the license file. User digital product license control program on the user computer does not check user information if a "CPU based license" indicator or similar information is on or stored in the license file. In still another embodiment, instead of entering the "user passphrase," the user can enter "passphrase of the CPU".

In registering the user CPU for the computer (once per CPU), the user digital product license control program creates a secret/public key pair for the CPU and sends the CPU public key to a digital product registration server. The license file is encrypted by the CPU public key and digitally signed by the digital product registration server

The digital product license control system of the present invention operates based on the following servers and software packages: a central digital product registration server obtaining digital product information from all digital product manufacturers and distributing the registered product information to local digital product registration servers all over the world, whereby the central registration server interfaces between all digital product manufacturers and local digital product registration servers; local digital product registration servers providing a user with the digital product information that is provided by the central digital product registration server, obtaining registration requests from users and providing license files to users; and software packages provided for general users, local digital product registration servers, the central digital product registration server and digital

product manufacturers.

According to the present invention, the software packages can be implemented using any existing computer language or coding and/or techniques to perform the functions of the present invention.

5   The invention being thus described, it will be obvious that the same may be varied in many ways. Such variations are not to be regarded as a departure from the spirit and scope of the invention, and all such modifications as would be obvious to one skilled in the art are intended to be included within the cope of the following claims.

~~TITLE OF INVENTION~~

DIGITAL PRODUCT LICENSE CONTROL ~~SYSTEM~~ SYSTEM BASED ON INDEPENDENT DIGITAL PRODUCT REGISTRATION SERVER

~~Technical field~~

~~Digital product license control~~

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~~Background art~~

~~Software license control,~~ RELATED APPLICATION

This is the national phase under 35 U.S.C. § 371 of PCT International

Application No. PCT/KR99/00277 which has an International filing date of

10   June 5, 1999, which designated the United States of America.

BACKGROUND OF THE INVENTION

Field of the Invention

This invention related to a digital product license control, ~~cryptography~~

~~Publication Garfinkel, Simson. PGP(Pretty Good Privacy).~~

15   ~~Schneier, Bruce. Applied Cryptography~~

~~Disclosure of invention~~

~~The~~ method and system for controlling licensing of digital products using

20   digital product registration servers.

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Discussion of Related Art

There are limited software license control systems and digital product license control systems for controlling licensing of certain products. But the present invention provides a digital product license control method and system which is superior and advantages over the existing product license control

5   systems.

SUMMARY OF THE INVENTION

The present invention is directed to a digital product license control method and system based on digital product registration servers, which

10   overcomes problems associated with related digital product license control methods and systems.

In accordance with an embodiment of the present invention, a method of controlling digital product licensing using product registration servers, comprises the steps of: creating a secret/public key pair for a digital product

15   manufacturer by using a manufacturer digital product license control program installed on a manufacturer computer, transmitting the manufacturer's public key to a central digital product registration server and receiving a public key of the central digital product registration server, registering the manufacturer to the central digital product registration server and receiving a partial user-ID file from a local digital product registration server, registering a digital product with

20   player information to the central digital product registration server and receiving a product registration file of the product from the central digital product registration server, distributing product information to all local digital product registration servers by the central digital product registration server,

25   and merging the product and the product registration file and encrypting them

to produce a digital product in a public format.

These and other objects of the present application will become more readily apparent from the detailed description given hereinafter. However, it should be understood that the detailed description and specific examples, while indicating preferred embodiments of the invention, are given by way of illustration only, since various changes and modifications within the spirit and scope of the invention will become apparent to those skilled in the art from this detailed description.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

According to the present invention, a registration server is independent of digital product manufacturers and open to all digital product manufacturers. Every digital product ~~needs~~ would need to be modified to participate in this new digital product license control system. ~~The~~ and method of the present invention.

In the present invention, a digital product manufacturer is registered to ~~the~~ a registration server. ~~Normally such~~ Generally, digital products such as MP3 or VOD files, which cannot be executed alone, are processed by specific programs (players). The product manufacturer registers his digital product, with the player information, to the registration server and ~~gets~~ obtains a product registration file of the product from the registration server. The product manufacturer merges the product and the product registration file and encrypts them using ~~manufacturer~~ the manufacturer's digital product license control program. The output is ~~the format of~~ a public digital product.

~~Public~~ A public digital product has a specific file type such as "sampleMP3.ds1". If a public digital product is executed on a user computer, ~~said~~ then that digital product is linked to a digital product execution program

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which is the subsystem of ~~user~~ the user's digital product license control

program. ~~Normally digital products are downloaded from Internet~~ installed on

the user computer. Digital products (public digital products) are then

downloaded from the Internet or other networks and are executed by double

5   clicking an icon on the user's computer screen.

Upon double clicking ~~of~~ on the digital product, ~~the digital product~~

~~execution~~ displayed on the user's computer screen, the user's license control

program processes the digital product. ~~The~~ Particularly, the user's license

control program decrypts ~~said~~ the digital product and reads ~~the~~ a product ID

10   from the product registration file. ~~And said program checks the license file to~~

~~know whether there is usage license for said~~ downloaded with the digital

product. The user's license control program also checks a license file to

determine whether there is a usage license for the digital product. The license

file ~~was received~~ is provided from a digital product registration server. If there is

15   no license for the digital product, ~~said~~ then the user's program asks the user to

buy a license ~~of the product. If user doesn't buy it, said program stops the~~

~~running of~~ for the digital product. If the user ~~buys it, the program receives~~ does

not agree to buy the license, then the user's program stops execution of the

digital product. However, if the user agrees to buy the license, then the user's

20   license control program receives a new license file, which includes the

purchased license, from the registration server and converts the ~~program~~

~~changes the~~ public digital product ~~to~~ into a personal digital product ~~format.~~

~~Personal.~~ A personal digital product has a specific file type such as

"sampleMP3.ds2".

25   If there ~~is the license, the program can change the public~~ already exists

a license by the user for the digital product, then the user's license control

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program can convert the (public) digital product to a personal digital product at any time. ~~Personal~~ A personal digital product cannot be interpreted without the user-ID file which was used in creating ~~said personal digital product~~ . ~~The program calls player to execute personal digital product. Unauthorized user~~

5   ~~cannot use~~ the personal digital product. Then the user's license control program calls a player or other suitable means to execute the personal digital product.

In the present invention, unauthorized users cannot access or use the personal digital product. Also the license file cannot be used or accessed by

10   unauthorized ~~user~~ users because ~~said~~ the license file is encrypted by using the ~~user~~ user's public key and ~~digital~~ digitally signed by ~~the~~ using a secret key of ~~a~~ the digital product registration server. To use a license file, the user needs the secret key of the user and ~~needs~~ a passphrase or the like to activate the secret key. The license file is ~~digital~~ digitally signed by the digital product registration

15   server and cannot be modified by ~~a~~ the user to add any unauthorized license.

The license file includes 3 pieces of information in addition to license information. They are: user ID, CPU (computer device) ID and owner ID. If the user ID in the license file is different from the user ID of the user-ID file, then the license file is ignored by ~~user~~ the user's digital product license control

20   program. If the CPU ID in the license file is different from the CPU ID of ~~the~~ processor, such as PSN of Intel processor Pentium III, or computer, then the license file is ignored by ~~user~~ the user's digital product license control program. ~~So,~~ In this manner, even authorized ~~user~~ users cannot execute their personal digital product on unauthorized computers.

25   ~~All digital product manufacturers register their products to the~~ A digital product license control system according to an embodiment of the present

invention includes one or more manufacturer computer devices or systems used and controlled by digital product manufactures, a central digital product registration server. ~~The~~ communicating with the manufacturer computer devices, a plurality of local registration servers communicating with the central

5   registration server and the manufacturer computer devices through the central registration server, and a plurality of user communication devices such as a user computer operating on a user side, for example by an individual end user, and communicating with the local registration servers via communication networks such as the Internet or via some other means. The term "local" does

10 not necessarily mean that the local registration server is located close to or locally of the user computer devices, but is used to merely distinguish the local registration server from the central registration server.

In accordance with the present invention, digital product manufacturers register their digital products to the central digital product registration server

15 using their manufacturer computer devices. The central registration server then distributes the registered product information to local digital product registration servers all over the world.

~~3~~ Three types of registration ~~need to be done by user. User~~ are needed by the user in the present invention and they are: user registration, CPU (user's

20 computer device) registration and digital product usage license registration. ~~User does~~ Each user ~~registration for~~ registrates himself or herself once per person using the user computer to the registration servers. After that, the user registers his or her CPU once per CPU. ~~User~~ Then the user registers a digital product usage license once per every product of specific CPU. All the

25 ~~registration is done after the connection to a~~ registrations are performed after the user's CPU or computer is connected to an appropriate local digital product

registration server. ~~On~~, e.g., via the Internet.

During the user registration, the user ~~gets~~ obtains a partial user-ID file from the local digital product registration server which communicates with the central registration server. After receiving the partial user-ID file, ~~user~~ the user's digital product license control program attaches a public/secret key pair ~~of~~ assigned to the user and a public key of the registration server of the user to the partial user-ID file. This user-ID file is essential in registering the user's CPU and purchasing the digital product. The user-ID file is independent of any CPU and ~~this file~~ needs to be copied to all of ~~his~~ the user's other CPUs.

~~On~~ During the CPU registration, the user ~~gets~~ obtains the license file from ~~the~~ local digital product registration server. And ~~the~~ this license file is updated every time the user purchases a new digital product or upgrades ~~a~~ the existing digital product. The digital product information is also added to the license file every time a new product is purchased or ~~a~~ the existing product is upgraded. Also, because of expiration ~~date~~ dates, the license file is refreshed periodically. ~~Expiration~~ The expiration date or refresh period prevents an unauthorized long-term use of the user-ID file or license file. ~~Digital~~ A digital product usage license is given to a specific CPU of a specific user.

In addition to a direct purchase through public digital product execution, there is ~~a~~ an indirect purchase. To purchase a digital product without executing the public digital product, the user selects a product category on a license control program screen of the user's computer, and then selects the digital product ~~on~~ from the displayed relevant digital products in that product category. Then, the ~~user~~ user's license control program sends a digital product purchase request to the appropriate digital product registration server. ~~The~~ which in turn transmits a license file to the user's computer. This

license file is dependent on a specific CPU. ~~The license file is~~ and given to a specific CPU of a specific user. Both the user-ID file and license file ~~is~~ are encrypted by the user public key and ~~digital~~ digitally signed by using the digital product registration server secret key. So, only the registration server can modify ~~said~~ the user-ID and license files.

In addition to ~~above method called user/CPU based license, there are two more methods. One is user-based license. The~~ the above "user/CPU based license" method, there are two additional methods according to the present invention: "user-based license" and "CPU-based license" methods. In the user-based license method, a license is given to a specific user without having any CPU restriction on its license file. This license can be used on any CPU and strongly controlled by the user. ~~The other method is~~ In the CPU-based license. ~~The~~ method, a license is given to a specific CPU without having any user restriction on its license file.

~~Normally~~ In one embodiment, the license file is encrypted by using a user public key, but the CPU based license file is encrypted by using the CPU public key. For the CPU based license, one pair of secret/public key is created just for the CPU. In case of the User/CPU based license and the user based license, the pair of secret/public key of the user is used without creating a new key pair for the CPU. In case ~~of company, there is an owner in addition to an user~~ the present invention is used in a company setting, a company owner may want to change user information of a PC/workstation. ~~This owner has right to change the user of a~~ depending on which person is using that PC/workstation. ~~If~~ For example, if an employee ~~quits~~ leaves the company, the company ~~(owner)~~ ~~is to~~ owner can assign ~~new user~~ a different user/employee to the PC/workstation. ~~There is~~ In this application, then both the company owner

information ~~in addition to~~ <u>and the</u> user information <u>are stored</u> in <u>the</u> license file <u>and used</u>.

If <u>the</u> digital product is executed on a specific machine such as <u>a</u> MP3 player, which ~~doesn't~~ <u>may not necessarily</u> have ~~such~~ <u>a</u> full configuration as <u>a</u>

5   personal computer, ~~the~~ <u>then the</u> <u>user will need to purchase a</u> digital product ~~needs to be purchased on~~ <u>through</u> a computer and ~~to be transferred to said~~ <u>transfer</u> <u>it to that</u> machine <u>(MP3 player)</u>. The user <u>also</u> needs to move his user-ID file, license file and personal digital products to ~~said~~ <u>the</u> machine. ~~Said~~ <u>The</u> user-ID file~~,~~ <u>and</u> license file are simplified ~~ones~~ <u>files</u> and created by ~~user~~ <u>the</u>

10   <u>user's</u> digital license control program. Basically ~~said~~ <u>the</u> machine is treated as part of the computer which has the license file. ~~Said~~ <u>The</u> machine has no CPU ID and is treated as if ~~said~~ <u>the</u> machine has <u>the</u> same CPU ID as ~~said~~ <u>the</u> computer. If ~~a~~ <u>the</u> user of ~~said~~ <u>the</u> machine ~~doesn't~~ <u>does not</u> have <u>access to</u> a computer, it can be done on any computer. ~~User~~ <u>The user's</u> digital license

15   control program <u>of the present invention</u> provides ~~the~~ <u>a</u> way to create <u>the</u> user-ID file and license file for ~~said machine.~~ <u>the machine.</u>

~~Best mode for carrying out the invention~~

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~~Method of~~<u>A method of controlling a</u> digital product license ~~control~~ based

20   on ~~independent~~ <u>a</u> digital product registration server ~~comprising the steps of:~~ <u>according to an embodiment of the present invention is as follows.</u>

~~. creating~~ <u>A</u> secret/public key pair for a digital product manufacturer <u>is</u> <u>created</u> by ~~the~~ <u>a</u> manufacturer digital product license control program <u>installed</u> on ~~the~~ <u>a</u> manufacturer computer. <u>After being connected to a.</u> ~~connecting~~

25   central digital product registration server, ~~sending said~~ <u>the manufacturer</u> <u>digital product license control program sends the</u> manufacturer's public key ~~to~~

~~said registration server and receiving the public key of said registration server.~~

~~. registering manufacturer once per manufacture~~ to the central digital product registration server and ~~receiving partial user-ID file from~~ receives the public key of the central digital product registration server.

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~~Manufacturer digital product license control program attaches the manufacturer secret/public key pair and the public key of~~ The manufacturer (once per manufacture) is registered to the central digital product registration server ~~to the~~. Once a user registers, the manufacturer receives a partial user-ID file from the ~~that includes manufacturer information encrypted by~~

10 ~~manufacturer public key and digital signed by the sever secret key.~~

~~. registering digital product, with player information, to~~ central digital product registration server. The manufacturer digital product license control program attaches the manufacturer's secret/public key pair and the public key of the ~~and receiving product registration file of the product from the server.~~

15 ~~. distributing the product information to all digital product registration servers in the world by~~ central digital product registration server to the partial user-ID file that includes manufacturer information encrypted by the manufacturer's public key and digitally signed by the sever secret key.

Each digital product, preferably with player information, is registered to

20 the central digital product registration server and the manufacturer computer receives a product registration file of the digital product from the central digital product registration server.

The product information is distributed to all local digital product registration servers by the central digital product registration server. Registered

25 digital product information includes a product ID, price, player name, etc. ~~So,~~ A user can select one or more digital ~~product~~ products from the registered digital

product list. ~~It is easier for user to buy a~~ That is, the user can purchase a digital product by using the digital product list or by executing the product itself. The product list file includes the product information such as product ID, price, etc. Also, the product itself includes the product information. It is

5 easier for the user to buy a particular public digital product by double clicking the public digital product and following the ~~instruction~~ instructions given by the user digital product execution program.

~~. merging the~~ The digital product and ~~said~~ the product registration file ~~and encrypting them by~~ are merged and encrypted by the manufacturer digital

10 product license control program installed on the manufacturer computer. The output is the format of public digital product.

~~. creating secret/public key pair for a user by the user digital product license control program on the user computer.~~

~~. connecting digital product registration server by selecting one from the~~

15 ~~digital product registration server list, sending said user's public key to said registration server and receiving the public key of said registration server.~~

~~. registering user once per person to the digital product registration server and receiving partial user-ID file from digital product registration server. User digital product license control program attaches the user secret/public~~

20 ~~key pair and the public key of the user's digital product registration server to the partial user-ID file that includes user information encrypted by user public key and digital signed by the sever secret key. This user-ID file is essential in registering CPU and in registering digital product usage license.~~

~~. registering CPU for his computer hardware once per CPU to said digital~~

25 ~~product registration server and receiving license file that includes CPU information encrypted by user public key and digital signed by digital product~~

registration server secret key.

. downloading public digital products from Internet by user

. double clicking public digital product on user computer.

. linking said digital product to digital product execution program of user

5   digital product license control program.

. processing public digital product, decrypting said public digital product

and reading the product ID from the product registration file by the linked

digital product execution program.

. checking the license file to know whether there is usage license for said

10   digital product.

. buying a license for the product or stopping the process, if there is no

license for the digital product.

. receiving new license file which includes the purchased license.

. changing the digital product to a personal product format if there is

15   license.

. calling player to execute personal digital product

. storing user information, CPU information and digital product usage

license information in digital product registration server database by the server.

. replicating digital product registration server database to central digital

20   product registration server database for backup purpose and for cross digital

product registration server function such as the change of digital product

registration server and change of user who is registered to a different digital

product registration server from the former user.

25   . updating user ID file and license file based on expiration date or

refresh period by user. Expiration date or refresh period prevents unauthorized

long-term use of the user-ID file or license file.

. changing the user of a CPU by the owner of the CPU in case of user change. License file has owner information.

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Industrial applicability

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Digital product license control system works based on following servers and software packages:

10 . Central digital product registration server gets digital product information from all digital product manufacturers and distributes the registered product information to digital product registration servers all over the world. Said central registration server does the interface between all digital product manufacturers and digital product registration centers.

15 . Normal digital product registration servers give user the digital product information that is given by central digital product registration server, get registration request from users and give license file to users.

. Software packages for general users, normal digital product registration servers, central digital product registration server and digital product 20 manufacturers. What is claimed is:

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1. Method of digital product license control based on independent digital product registration server comprising the steps of:

25 . creating secret/public key pair for a digital product manufacturer by the manufacturer digital product license control program on the manufacturer

computer.

~~. connecting central digital product registration server, sending said manufacturer's public key to said registration server and receiving the public key of said registration server.~~

5 ~~. registering manufacturer once per manufacture to the central digital product registration server and receiving partial user-ID file from digital product registration server. Manufacturer digital product license control program attaches the manufacturer secret/public key pair and the public key of central digital product registration server to the partial user-ID file that~~

10 ~~includes manufacturer information encrypted by manufacturer public key and digital signed by the sever secret key.~~

~~. registering digital product, with player information, to central digital product registration server and receiving product registration file of the product from the server.~~

15 ~~. distributing the product information to all digital product registration servers in the world by central digital product registration server. Registered digital product information includes product ID, price, player name, etc. So, user can select digital product from the registered digital product list. It is easier for user to buy a digital product by double clicking the public digital~~

20 ~~product and following the instruction given by the user digital product execution program.~~

~~. merging the product and said product registration file and encrypting them by manufacturer digital product license control program. The output is the format of public digital product.~~

25 ~~. creating secret/public key pair for a user by the user digital product license control program on the user computer.~~

. connecting digital product registration server by selecting one from the digital product registration server list, sending said user's public key to said registration server and receiving the public key of said registration server.

. registering user once per person to the digital product registration server and receiving partial user-ID file from digital product registration server. User digital product license control program attaches the user secret/public key pair and the public key of the user's digital product registration server to the partial user-ID file that includes user information encrypted by user public key and digital signed by the sever secret key. This user-ID file is essential in registering CPU and in registering digital product usage license.

. registering CPU for his computer hardware once per CPU to said digital product registration server and receiving license file that includes CPU information encrypted by user public key and digital signed by digital product registration server secret key.

. downloading public digital products from Internet by user

. double clicking public digital product on user computer.

. linking said digital product to digital product execution program of user digital product license control program.

. processing public digital product, decrypting said public digital product and reading the product ID from the product registration file by the linked digital product execution program.

. checking the license file to know whether there is usage license for said digital product.

. buying a license for the product or stopping the process, if there is no license for the digital product.

. receiving new license file which includes the purchased license.

. changing the digital product to a personal product format if there is license.

. calling player to execute personal digital product

.storing user information, CPU information and digital product usage
5 license information in digital product registration server database by the server.

. replicating digital product registration server database to central digital product registration server database for backup purpose and for cross digital product registration server function such as the change of digital product registration server and change of user who is registered to a different digital
10 product registration server from the former user.

. updating user ID file and license file based on expiration date or refresh period by user. Expiration date or refresh period prevents unauthorized long term use of the user ID file or license file.

15 . changing the user of a CPU by the owner of the CPU in case of user change. License file has owner information.

A method according to claim 1 wherein connecting to the only one digital product registration server automatically. Only one registration server exists in
20 the world and does all registration service.

Consequently, there is no replication from registration server to central registration server and no distribution of registered product information from central registration server to registration servers, since there is only one server.

A method according to claim 1 wherein validating digital product usage
25 license without giving limitation to a specific CPU. User digital product license control program on user computer doesn't check CPU information if "user

~~based license" indicator is on in license file.~~

~~A method according to claim 1 wherein validating digital product usage license without giving limitation to the specific user described in license file. User digital product license control program on user computer doesn't check~~

5 ~~user information if "CPU based license" indicator is on in license file. Instead of entering "user passphrase" user enters "passphrase of the CPU". In registering CPU for the computer once per CPU, user digital product license control program creates secret/public key pair for the CPU and sends the public key to digital product registration server. The license file is encrypted by the CPU~~

10 ~~public key and digital signed by digital product registration server~~

~~A method according to claim 1 wherein transferring user-ID file, license file and personal digital products to a specific machine such as MP3 player. If digital product is executed on said machine, which doesn't have such full configuration as personal computer, the digital product needs to be purchased~~

15 ~~on a computer and to be transferred to said machine. Said user-ID file, license file are simplified ones and created by user digital license control program. Basically said machine is treated as part of the computer which has the license file. Said machine has no CPU ID and is treated as if said machine has same CPU ID as said computer. If a user of said machine doesn't have a computer, it~~

20 ~~can be done on any computer. User digital license control program provides the way to create user-ID file and license file for said machine.~~

~~Abstract~~

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~~The registration server is independent of digital product manufacturers~~

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~~and open to all digital product manufacturers. The manufacturer registers his~~
~~digital product to the server and gets product registration file of the product~~
~~from the server. The product manufacturer merges the product and the~~
~~product registration file and encrypts them using manufacturer digital product~~
~~license control program. If a public digital product is executed on user~~
~~computer, said digital product is linked to digital product execution program~~
~~which is subsystem of user digital product license control program. The~~
~~program decrypts said digital product and reads the product ID from the~~
~~product registration file. And said program checks the license file received from~~
~~a digital product registration server. If there is no license for the digital~~
~~product, said program asks the user to buy a license of the product.~~ A
secret/public key pair for the user is created by the user digital product license
control program on the user computer.

The user connects to a particular local digital product registration server
by selecting one from the digital product registration server list displayed on
the user computer. The user's public key is then sent to the selected local
digital product registration server and the public key of the selected local
registration server is received by the user computer.

The user (once per person) is registered to the local digital product
registration server and the user computer receives a partial user-ID file created
based on the registered user information from the local digital product
registration server. The user digital product license control program attaches
the user's secret/public key pair and the public key of the user's local digital
product registration server to the partial user-ID file that includes user
information encrypted by the user's public key and digitally signed by the local
sever secret key. This user-ID file is essential in registering the user's CPU and

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in registering a digital product usage license.

The user can register his or her CPU for his computer hardware (once per CPU) to the local digital product registration server. In return, the user computer receives a license file that includes CPU information encrypted by the user's public key and digitally signed by the local digital product registration server secret key from the local digital product registration server.

Public digital products are downloaded from the Internet by the user. The user can double click on a desired public digital product displayed on the user computer. The selected digital product is linked to the digital product execution program of the user digital product license control program installed on the user computer.

The selected public digital product is processed and decrypted and the product ID is read from the product registration file by the linked digital product execution program of the user. The user license control program checks the license file to determine whether there is a usage license for the selected digital product.   If there is no license obtained by the user for the selected digital product, the user can purchase a license for the product; otherwise, the process stops. The newly purchased license file will include the purchased license. However, if there already is a license obtained by the user, the selected digital product is converted into a personal digital product (i.e., format is converted) by the user license control program. Then the personal digital product is executed by a player or the like. User information, CPU information and the digital product usage license information are stored in the local digital product registration server database by the local digital product registration server. The local digital product registration server database is replicated in the central digital product registration server database for backup

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purposes and for cross digital product registration server function such as changing the digital product registration server and changing the user who was registered to a different digital product registration server from the former user.

5   In one embodiment, the user-ID file and the license file are updated based on their expiration dates or refresh period. Expiration date or refresh period prevents unauthorized long-term use of the user-ID file and/or license file. The user of a CPU may be changed by the owner of the CPU in case of a user change. The license file can include the owner information.

10   In another embodiment, only one registration server exists in the world and does all registration services. In such case, the digital product registration server is connected automatically.   Consequently, replication from local registration servers to a central registration server is not needed and distribution of registered product information from the central registration server to local registration servers is not needed, since there is only one 15   registration server.

In one embodiment, a digital product usage license is validated without giving limitation to a specific CPU. User digital product license control program on a user computer does not check CPU information if a "user based license" indicator or similar information is on or stored in the license file.

20   In another embodiment, a digital product usage license is validated without giving limitation to the specific user described in the license file. User digital product license control program on the user computer does not check user information if a "CPU based license" indicator or similar information is on or stored in the license file. In still another embodiment, instead of entering the 25   "user passphrase," the user can enter "passphrase of the CPU".

In registering the user CPU for the computer (once per CPU), the user

digital product license control program creates a secret/public key pair for the CPU and sends the CPU public key to a digital product registration server. The license file is encrypted by the CPU public key and digitally signed by the digital product registration server

5   The digital product license control system of the present invention operates based on the following servers and software packages: a central digital product registration server obtaining digital product information from all digital product manufacturers and distributing the registered product information to local digital product registration servers all over the world,

10   whereby the central registration server interfaces between all digital product manufacturers and local digital product registration servers; local digital product registration servers providing a user with the digital product information that is provided by the central digital product registration server, obtaining registration requests from users and providing license files to users;

15   and software packages provided for general users, local digital product registration servers, the central digital product registration server and digital product manufacturers.

According to the present invention, the software packages can be implemented using any existing computer language or coding and/or

20   techniques to perform the functions of the present invention.

The invention being thus described, it will be obvious that the same may be varied in many ways. Such variations are not to be regarded as a departure from the spirit and scope of the invention, and all such modifications as would be obvious to one skilled in the art are intended to be included within

25   the cope of the following claims.

Title of invention

Digital product license control system based on independent digital product

registration server

Technical field

Digital product license control

Background art

· Software license control, digital product license control, cryptography

Publication – Garfinkel, Simson. PGP(Pretty Good Privacy).

Schneier, Bruce. Applied Cryptography

Disclosure of invention

The registration server is independent of digital product manufacturers and

open to all digital product manufacturers. Every digital product needs to be

modified to participate in this new digital product license control system.

The digital product manufacturer is registered to the registration server.

Normally such digital products as MP3 or VOD files, which cannot be

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executed alone, are processed by specific programs (players). The manufacturer registers his digital product, with the player information, to the server and gets product registration file of the product from the server. The product manufacturer merges the product and the product registration file and encrypts them using manufacturer digital product license control program. The output is the format of public digital product. Public digital product has specific file type such as "sampleMP3.ds1". If a public digital product is executed on user computer, said digital product is linked to digital product execution program which is subsystem of user digital product license control program. Normally digital products are downloaded from Internet and are executed by double clicking. Upon double clicking of the digital product, the digital product execution program processes the digital product. The program decrypts said digital product and reads the product ID from the product registration file. And said program checks the license file to know whether there is usage license for said digital product. The license file was received from a digital product registration server. If there is no license for the digital product, said program asks the user to buy a license of the product. If user doesn't buy it, said program stops the running of the digital product. If the user buys it, the program receives new license file, which includes the purchased license, from the server and the program changes the digital product to a personal digital product format. Personal digital product has specific file type such as "sampleMP3.ds2". If there is

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the license, the program can change the public digital product to a personal digital product any time. Personal digital product cannot be interpreted without the user-ID file which was used in creating said personal digital product . The program calls player to execute personal digital product. Unauthorized user cannot use the personal digital product. Also the license file cannot be used by unauthorized user because said file is encrypted by the user public key and digital signed by the secret key of a digital product registration server. To use a license file, user needs the secret key of the user and needs passphrase to activate the secret key. The license file is digital signed by digital product registration server and cannot be modified by a user to add unauthorized license. The license file includes 3 information in addition to license information. They are user ID, CPU ID and owner ID. If user ID in license file is different from user ID of user-ID file, the license file is ignored by user digital product license control program. If CPU ID in license file is different from CPU ID of the processor, such as PSN of Intel processor Pentium III, the license file is ignored by user digital product license control program. So, even authorized user cannot execute personal digital product on unauthorized computers.

All digital product manufacturers register their products to the central digital product registration server. The central registration server distributes the registered product information to digital product registration servers all over the world. 3 types of registration need to be done by user. User registration,

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CPU registration and digital product usage license registration. User does user registration for himself once per person. After that, the user registers his CPU once per CPU. User registers digital product usage license once per every product of specific CPU. All the registration is done after the connection to a digital product registration server. On user registration, the user gets partial user-ID file from the digital product registration server. After receiving the partial user-ID file, user digital product license control program attaches public/secret key pair of the user and public key of the registration server of the user to the partial user-ID file. This user-ID file is essential in registering CPU and purchasing digital product. The user-ID file is independent of any CPU and this file needs to be copied to all of his CPUs. On CPU registration, user gets license file from digital product registration server. And the license file is updated every time the user purchases new digital product or upgrades a digital product. The digital product information is added to the license file every time new product is purchased or a product is upgraded. Also because of expiration date, the license file is refreshed periodically. Expiration date or refresh period prevents unauthorized long-term use of the user-ID file or license file. Digital product usage license is given to a specific CPU of a specific user. In addition to direct purchase through public digital product execution, there is a indirect purchase. To purchase a digital product without executing the public digital product, user selects product category on license control

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program screen, and then selects the digital product on displayed relevant digital products in that product category. Then, the user license control program sends digital product purchase request to the digital product registration server. The license file is dependent on a specific CPU. The license file is given to a specific CPU of a specific user. Both the user-ID file and license file is encrypted by user public key and digital signed by digital product registration server secret key. So, only the registration server can modify said files. In addition to above method – called user/CPU based license, there are two more methods. One is user-based license. The license is given to a specific user without having any CPU restriction on its license file. This license can be used on any CPU and strongly controlled by the user. The other method is CPU-based license. The license is given to a specific CPU without having any user restriction on its license file.

Normally license file is encrypted by user public key but CPU based license file is encrypted by the CPU public key. For CPU based license, one pair of secret/public key is created just for the CPU. In case of User/CPU based license and user based license, the pair of secret/public key of the user is used without creating new key pair for the CPU. In case of company, there is an owner in addition to an user of a PC/workstation. This owner has right to change the user of a PC/workstation. If an employee quits the company, the company (owner) is to assign new user to the PC/workstation. There is owner information in addition to user information in license file. If digital

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product is executed on a specific machine such as MP3 player, which doesn't have such full configuration as personal computer, the digital product needs to be purchased on a computer and to be transferred to said machine. The user needs to move his user-ID file, license file and personal digital products to said machine. Said user-ID file, license file are simplified ones and created by user digital license control program. Basically said machine is treated as part of the computer which has the license file. Said machine has no CPU ID and is treated as if said machine has same CPU ID as said computer. If a user of said machine doesn't have a computer, it can be done on any computer. User digital license control program provides the way to create user-ID file and license file for said machine.

Best mode for carrying out the invention

Method of digital product license control based on independent digital product registration server comprising the steps of:

. creating secret/public key pair for a digital product manufacturer by the manufacturer digital product license control program on the manufacturer computer.

. connecting central digital product registration server, sending said manufacturer's public key to said registration server and receiving the

public key of said registration server.

. registering manufacturer once per manufacture to the central digital product registration server and receiving partial user-ID file from digital product registration server. Manufacturer digital product license control program attaches the manufacturer secret/public key pair and the public key of central digital product registration server to the partial user-ID file that includes manufacturer information encrypted by manufacturer public key and digital signed by the sever secret key.

. registering digital product, with player information, to central digital product registration server and receiving product registration file of the product from the server.

. distributing the product information to all digital product registration servers in the world by central digital product registration server. Registered digital product information includes product ID, price, player name, etc. So, user can select digital product from the registered digital product list. It is easier for user to buy a digital product by double clicking the public digital product and following the instruction given by the user digital product execution program.

. merging the product and said product registration file and encrypting them by manufacturer digital product license control program. The output is the format of public digital product.

. creating secret/public key pair for a user by the user digital product license

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control program on the user computer.

. connecting digital product registration server by selecting one from the digital product registration server list, sending said user's public key to said registration server and receiving the public key of said registration server.

. registering user once per person to the digital product registration server and receiving partial user-ID file from digital product registration server. User digital product license control program attaches the user secret/public key pair and the public key of the user's digital product registration server to the partial user-ID file that includes user information encrypted by user public key and digital signed by the sever secret key. This user-ID file is essential in registering CPU and in registering digital product usage license.

. registering CPU for his computer hardware once per CPU to said digital product registration server and receiving license file that includes CPU information encrypted by user public key and digital signed by digital product registration server secret key.

. downloading public digital products from Internet by user

. double clicking public digital product on user computer.

. linking said digital product to digital product execution program of user digital product license control program.

. processing public digital product, decrypting said public digital product and reading the product ID from the product registration file by the linked digital product execution program.

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. checking the license file to know whether there is usage license for said digital product.

. buying a license for the product or stopping the process, if there is no license for the digital product.

. receiving new license file which includes the purchased license.

. changing the digital product to a personal product format if there is license.

. calling player to execute personal digital product

.storing user information, CPU information and digital product usage license information in digital product registration server database by the server.

. replicating digital product registration server database to central digital product registration server database for backup purpose and for cross digital product registration server function such as the change of digital product registration server and change of user who is registered to a different digital product registration server from the former user.

. updating user-ID file and license file based on expiration date or refresh period by user. Expiration date or refresh period prevents unauthorized long-term use of the user-ID file or license file.

. changing the user of a CPU by the owner of the CPU in case of user change. License file has owner information.

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Industrial applicability

Digital product license control system works based on following servers and software packages:

. Central digital product registration server gets digital product information from all digital product manufacturers and distributes the registered product information to digital product registration servers all over the world. Said central registration server does the interface between all digital product manufacturers and digital product registration centers.

. Normal digital product registration servers give user the digital product information that is given by central digital product registration server, get registration request from users and give license file to users.

. Software packages for general users, normal digital product registration servers, central digital product registration server and digital product manufacturers.

What is claimed is:

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1. Method of digital product license control based on independent digital product registration server comprising the steps of:

. creating secret/public key pair for a digital product manufacturer by the manufacturer digital product license control program on the manufacturer computer.

. connecting central digital product registration server, sending said manufacturer's public key to said registration server and receiving the public key of said registration server.

. registering manufacturer once per manufacture to the central digital product registration server and receiving partial user-ID file from digital product registration server. Manufacturer digital product license control program attaches the manufacturer secret/public key pair and the public key of central digital product registration server to the partial user-ID file that includes manufacturer information encrypted by manufacturer public key and digital signed by the sever secret key.

. registering digital product, with player information, to central digital product registration server and receiving product registration file of the product from the server.

. distributing the product information to all digital product registration

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servers in the world by central digital product registration server. Registered

digital product information includes product ID, price, player name, etc. So,

user can select digital product from the registered digital product list. It is

easier for user to buy a digital product by double clicking the public digital

product and following the instruction given by the user digital product

execution program.

. merging the product and said product registration file and encrypting them

by manufacturer digital product license control program. The output is the

format of public digital product.

. creating secret/public key pair for a user by the user digital product license

control program on the user computer.

. connecting digital product registration server by selecting one from the

digital product registration server list, sending said user's public key to said

registration server and receiving the public key of said registration server.

. registering user once per person to the digital product registration server

and receiving partial user-ID file from digital product registration server.

User digital product license control program attaches the user secret/public

key pair and the public key of the user's digital product registration server to

the partial user-ID file that includes user information encrypted by user

public key and digital signed by the sever secret key. This user-ID file is

essential in registering CPU and in registering digital product usage license.

. registering CPU for his computer hardware once per CPU to said digital

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product registration server and receiving license file that includes CPU

information encrypted by user public key and digital signed by digital

product registration server secret key.

. downloading public digital products from Internet by user

. double clicking public digital product on user computer.

. linking said digital product to digital product execution program of user

digital product license control program.

. processing public digital product, decrypting said public digital product

and reading the product ID from the product registration file by the linked

digital product execution program.

. checking the license file to know whether there is usage license for said

digital product.

. buying a license for the product or stopping the process, if there is no

license for the digital product.

. receiving new license file which includes the purchased license.

. changing the digital product to a personal product format if there is license.

. calling player to execute personal digital product

.storing user information, CPU information and digital product usage license

information in digital product registration server database by the server.

. replicating digital product registration server database to central digital

product registration server database for backup purpose and for cross digital

product registration server function such as the change of digital product

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registration server and change of user who is registered to a different digital product registration server from the former user.

. updating user-ID file and license file based on expiration date or refresh period by user. Expiration date or refresh period prevents unauthorized long-term use of the user-ID file or license file.

. changing the user of a CPU by the owner of the CPU in case of user change. License file has owner information.

2. A method according to claim 1 wherein connecting to the only one digital product registration server automatically. Only one registration server exists in the world and does all registration service.

Consequently, there is no replication from registration server to central registration server and no distribution of registered product information from central registration server to registration servers, since there is only one server.

3. A method according to claim 1 wherein validating digital product usage license without giving limitation to a specific CPU. User digital product license control program on user computer doesn't check CPU information if "user based license" indicator is on in license file.

4. A method according to claim 1 wherein validating digital product usage license without giving limitation to the specific user described in license file.

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User digital product license control program on user computer doesn't check user information if "CPU based license" indicator is on in license file. Instead of entering "user passphrase" user enters "passphrase of the CPU". In registering CPU for the computer once per CPU, user digital product license control program creates secret/public key pair for the CPU and sends the public key to digital product registration server. The license file is encrypted by the CPU public key and digital signed by digital product registration server

5. A method according to claim 1 wherein transferring user-ID file, license file and personal digital products to a specific machine such as MP3 player. If digital product is executed on said machine, which doesn't have such full configuration as personal computer, the digital product needs to be purchased on a computer and to be transferred to said machine. Said user-ID file, license file are simplified ones and created by user digital license control program. Basically said machine is treated as part of the computer which has the license file. Said machine has no CPU ID and is treated as if said machine has same CPU ID as said computer. If a user of said machine doesn't have a computer, it can be done on any computer. User digital license control program provides the way to create user-ID file and license file for said machine.

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Insert Title: <u>DIGITAL PRODUCT LICENSE CONTROL SYSTEM BASED ON INDEPENENT DIGITAL PRODUCT REGISTRATION SERVER</u>

Fill in Appropriate Information -
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International Application Number PCT/KR99/00277 _____ ; and was
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I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

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I do not know and do not believe the same was ever known or used in the United States of America before my or our invention thereof, or patented or described in any printed publication in any country before my or our invention thereof or more than one year prior to this application, that the same was not in public use or on sale in the United States of America more than one year prior to this application, that the invention has not been patented or made the subject of an inventor's certificate issued before the date of this application in any country foreign to the United States of America on an application filed by me or my legal representative or assigns more than twelve months (six months for designs) prior to this application, and that no application for patent or inventor's certificate on this invention has been filed in any country foreign to the United States of America prior to this application by me or my legal representatives or assigns, except as follows:

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Insert Priority Information:
(if appropriate)

Prior Foreign Application(s)   Priority Claimed

(Number)	(Country)	(Month/Day/Year Filed)	☐ Yes	☐ No
(Number)	(Country)	(Month/Day/Year Filed)	☐ Yes	☐ No
(Number)	(Country)	(Month/Day/Year Filed)	☐ Yes	☐ No

I hereby claim the benefit under Title 35, United States Code, §119(e) of any United States provisional applications(s) listed below.

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Insert Prior U.S. Application(s):
(if any)

PCT/KR99/00277	June 5, 1999	Pending
(Application Number)	(Filing Date)	(Status - patented, pending, abandoned)
(Application Number)	(Filing Date)	(Status - patented, pending, abandoned)

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(Rev. 06/29/01)

Attorney Docket No. 3882-0101P

I hereby appoint the practitioners at CUSTOMER NO. 2292 as my attorneys or agents to prosecute this application and/or an international application based on this application and to transact all business in the United States Patent and Trademark Office connected therewith and in connection with the resulting patent based on instructions received from the entity who first sent the application papers to the practitioners, unless the inventor(s) or assignee provides said practitioners with a written notice to the contrary:

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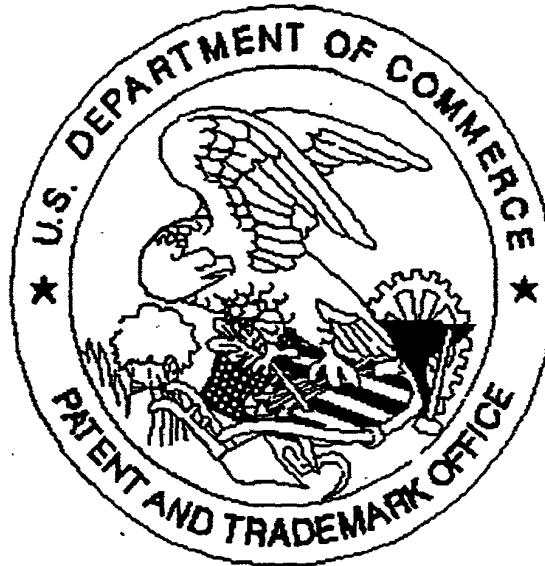
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